Docket No.: 22114-00001-US1
(PATENT)

IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

In re Patent Application of:
Jerome Asius et al.

Application No.: 10/809,349 Confirmation No.: 7560

Filed: March 26, 2004 Art Unit: 3738

For: IMPLANT FOR SUBCUTANEOUS OR INTRADERMAL INJECTION Examiner: P. B. Prebilic

REPLY BRIEF UNDER 37 C.F.R. § 41.41

MS Appeal Brief - Patents
Commissioner for Patents
P.O. Box 1450
Alexandria, VA 22313-1450

Dear Sir:

This is a Reply Brief to the Examiner's Answer dated May 9, 2008 under 37 CFR 41.41.

ARGUMENT

Claims 10-19 and 23 are rejected as being obvious and therefore unpatentable under 35 USC 103(a) over US Patent 5,356,629 to Sander et al. in view of US Patent 5,470,582 to Supersaxo et al. and Claims 24-27 are rejected as being obvious and therefore unpatentable under 35 USC 103(a) over US Patent 5,356,629 to Sander and US Patent 5,470,582 to Supersaxo and further in view of US Patent 5,599,852 to Scopelianos et al. As discussed in our Appeal Brief, the cited references do not render obvious the above claims. The following arguments are presented in response to the Examiner's Answer to further point out that the present claims are not rendered obvious by the cited art.

I. The Claimed Invention Has Been Mischaracterized in the Examiner's Answer

The first paragraph on page 5 of the Examiner's Answer under the Heading Issue A states the following:

"However, the present claims only require 'a hydrogel precursor' or a 'freeze-dried' composition that contained a gel -------. "

This statement does not fully characterize the claimed invention. In particular, independent claim 1 relates to a reconstitutable product, which upon the addition of water becomes a bioresorbable, injectable implant product. The reconstitutable product, as recited in claim 1, comprises a freeze-dried composition of: microparticles of at least one polymer of non-animal origin selected from the group consisting of lactic acid polymers, glycolic acid polymers, and lactic acid-glycolic acid co-polymers; and a hydrogel precursor consisting essentially of materials of non-animal origin. The precursor forms a hydrogel upon the addition of water. Independent claim 23 also relates to a reconstitutable bioresorbable injectable implant product. The product of claim 23 is made by freeze-drying a composition consisting essentially of bioresorbable microspheres or microparticles suspended in a gel. The gel consists essentially of materials of non-animal origin and the microspheres or microparticles consisting of at least one polymer of non-animal origin selected from the group consisting of lactic acid polymers, glycolic acid polymers, and lactic acid-glycolic acid co-polymers.

Clearly, the present claims require much more than just a hydrogel precursor or a freeze-dried composition that contained a gel. As stated in the claims the present claims are directed to a reconstitutable product which upon the addition of water becomes a bioresorbable, injectable implant product. Nowhere in Sander is there any mention of or slightest hint of a reconstitutable product or a product that is injectable.

The following is further stated in the Examiner's Answer:

> "Moreover, the Appellant has not particularly limited the claims to a particular definition for a gel because Appellant merely argues that a 'gel' is typically defined as ….a jelly-like product.

II. Compositions of Sander Can Not Inherently Be Gel Precursors

The first paragraph under Issue A in the Examiner's Answer further states;

"Furthermore, Sander utilizes the same specific material, 'cellulose ether', as the Appellant (see dependent claims 13 and 14) so Sander must inherently be a gel precursor to the extent required by the present claims."

The conclusion in the Examiner's Answer that Sander utilizes the same specific material, "cellulose ether", as the Appellant is unsupported. The cellulose ethers employed in Sander are not for the same purpose as the gelling agents employed according to the present invention and the compositions are for vastly different purposes. The compositions of Sander are malleable putties; whereas, the final compositions of the present invention after being reconstituted are injectable hydrogels.

The particular cellulose ether to be employed would be chosen from the wide variety of cellulose ethers based upon the desired use of the cellulose ether and composition and characteristics of the cellulose ether. As is well known in the art, the properties and functions of a cellulose ether depend not only upon its chemical formula but also upon a number of other characteristics such as molecular weight, viscosity, crosslinked degree, if any, and degree of substitution, if any, such as with sodium. Accordingly, persons skilled in the art, once aware of the present disclosure, would readily select those materials such as cellulose derivatives having the necessary characteristics, both chemical and physical, so that the selected compounds would act as gelling agents. On the other hand, persons skilled in the art following the suggestions in Sander would select those different cellulose ethers that would function as matrix materials and the compositions would result in being moldable and shapeable, not injectable. Accordingly, the cellulose ethers are not the same specific materials as those employed according to the present invention.

Furthermore, it seems apparent from the entire disclosure of Sander that the cellulose ethers are intended to only function as a matrix material. For instance, when discussing the use of

hyaluronic acid, another matrix material, Sander mentions that it can be used in another capacity as a thickening agent. See column 3, lines 4-11. Accordingly, if the cellulose ether were to function in the compositions therein for a purpose in addition to being the matrix, Sander would have surely discussed the further function.

The last sentence in the first paragraph under ISSUE A states:

"Additionally, Sander does not only describe the semisolid material as a 'putty' but also describes the material as 'a highly viscous substance which is yet flowable to some extent such as a gel, paste, putty or clay'; see column 2, lines 52-53."

However, as mentioned above, nowhere is there any mention in Sander of a reconstitutable product or a product that is injectable as recited in the present claims and nowhere in Sander is there a composition explicitly disclosed that is other than a putty. The above sentence from Sander relied upon in the Examiner's Answer should be read in the context of the entire disclosure of Sander to appreciate what it would convey to a person skilled in the art. In particular, the entire paragraph at column 2, lines 33-56 clearly points out that the compositions possess the ability to form moldable, semisolid compositions upon the introduction of an appropriate liquid medium. Sander states that the product is more closely related to a solid than a liquid. In addition, the sentence relied upon in the Examiner's Answer further clarifies the intent of the broad reference to gel, paste, putty or clay, by explicitly stating that the highly viscous substance is capable of being molded or shaped to fit into defects of bone. Please see column 2, lines 54-55 of Sander. Also, at column 5, lines 18-28, Sander refers to the compositions being formulated to possess certain stiffness upon wetting. This is a desirable characteristic for a moldable, shapeable composition but not a property discussed for an injectable composition.

In the last in the paragraph bridging pages 5 and 6, the present invention is characterized as follows:

"Finally, the Appellant has not claimed a gel but merely 'a hydrogel precursor' (see claim 10, line 7) or a composition that contained a gel before it was freeze dried (see claim 23)."

As discussed above the present claims require much more than that asserted in the Examiner's Answer.

III. Sander Does Not Disclose the Compositions as Reconstitutable and/or Injectable

The first full paragraph on page 6 of the Examiner's Answer states as follows:

"However, Sander utilizes the same material, 'cellulose ether', as the Appellant does so it is inherently reconstitutable to the extent required."

This conclusion is unsupported since, as discussed above, the cellulose ethers employed in Sander are not for the purpose as the gelling agents employed according to the present invention and the compositions are for entirely different purposes.

Also, the first full paragraph on page 6 of the Examiner's Answer states as follows:

"Furthermore, Sander discloses a step of reconstituting the composition by wetting them to make them more workable; see column 3, lines 38-47."

This interpretation is not supported. The portion of Sander relied upon merely refers to the amount of matrix material present both prior to and after wetting. Nothing, whatsoever therein, suggests that the compositions are initially in the "wetted state", then dried and then reconstituted to its original wetted condition.

Sander does not even remotely suggest a product that is reconstitutable, which upon the addition of water becomes an injectable implant product much less being a hydrogel. In fact, since Sander requires shaping the implant after implantation such as with a surgical spatula, it

would be counterintuitive to inject the product therein. It is not apparent how an injectable material would then be moldable as described in Sander such as at column 6, lines 61-67.

On the other hand, the injectable hydrogels made from the reconstitutable compositions of the present invention would not be moldable in the manner required by Sander into a bone defect.

Clearly the malleable putties of Sander are not suitable for injection. Sander suggests compositions that are moldable for implantation into a bone defect site and subsequently shaped or molded such as with a spatula. For instance, see for instance column 1, lines 8-10 and 59; and column 2, lines 12-14, 54 and column 5, lines 39-42 and 59-67. Nowhere does Sander even hint at an injectable product, so it can not be concluded that the compositions therein would inherently be injectable.

IV. Sander Teaches Away from Microparticles

The second full paragraph on page 6 of the Examiner's Answer states as follows:

"Since the particles utilized by Sander can be as small as 100 microns (see column, lines 31-39), the Examiner asserts that Sander discloses 'microparticles' even though they are not called by that name."

By reciting "microparticles", Appellant's claims refer to those particles that are in the micron range such as having a mean diameter of 5 to 150 μm. On the hand, Sander never uses the phrase "microparticles" and the smallest particles possible are 100 μm. Actually, if anything, Sander teaches away from selecting microparticles of the biocompatible particles since the preferred biocompatible particles have an average particle size of about 0.1 to about 3 mm (i.e. 100 to 3000 μm) (see column 4, line 34). Sander clearing does not teach the range as claimed. Moreover, Sander has failed to attach any importance to the particle size of the biocompatible material since the examples do not even refer to the particle sizes of the biocompatible material. Therefore, Sander fails to require employing microparticles as recited in the present claims.

It should also be noted that the polymers of the microparticles recited in the present claims are merely a small group of the numerous possible polymers contemplated by Sander.

V. Compositions of Sander Do Not Inherently Function in the Same Way as Appellant's Compositions

The last paragraph on page 6 of the Examiner's Answer states as follows:

"In response to Appellant's argument that the Sander cellulose derivatives function as matrix materials not gelling agents as claimed, the examiner asserts that the material of Sander is the same as that claimed so it inherently functions in the same manner; see MPEP 2112.01, subsections I and II that are incorporated herein by reference."

However, as discussed above, the cellulose ethers employed in Sander are not for the purpose as the gelling agents employed according to the present invention and the compositions are for entirely different purposes. Therefore, this conclusion is unsupported. In fact, having the cellulose ethers in Sander function as gelling agents rather than matrix materials would be contrary to the suggestions in Sander and would tend to defeat the purposes of Sander. Furthermore, as discussed above, if the cellulose ether were to function in the compositions therein for a purpose in addition to being the matrix, Sander would have surely discussed the further function.

With respect to inherency, such requires that the recited results or structure must necessarily be obtained not merely that it might be achieved. See *Electra Medical Systems S.A.* v. *Cooper Life Sciences, Inc.*, 32 USPQ2d 1017 (Fed. Cir. 1994); *Akzo N.V. v. U.S. International Trade Commissioner* 1 USPQ2d 1241 (Fed. Cir. 1986); *In re Oelrich*, 212 USPQ 323 (CCPA 1981) and *In re Robertson*, 49 USPQ2d 1949 (Fed. Cir.1999).

The above differences between the present claims and Sander are important in view of the vastly different uses intended and the distinct properties needed for these uses.

VI. Freeze Drying the Compositions of Sander Would Not Have Been Obvious

In the paragraph bridging pages 3 and 4 of the Examiner's Answer, Supersaxo was relied upon for a disclosure of freeze drying in order to stabilize the materials for storage. However, it is not apparent from reading Sander in its entirety that persons skilled in the art would find any reason or need to freeze dry the compositions of Sander. The particular method described by Sander to prepare the compositions involves first mixing a dry powder-like form of the matrix material and the biocompatible particles together to ensure uniform distribution of the biocompatible particles within the matrix. After this, the liquid is added to the mixture to provide the moldable composition which can then be implanted and shaped in a bone defect site. See column 5, lines 29-42. Sander further describes that the liquid medium can be added to the composition just before implantation into the bone defect such as during surgery. See column 5, lines 61-63 thereof.

Persons skilled in the art would not have a rational reason to freeze dry the mix of the powder-like form of the matrix material and the biocompatible particles or the composition after the liquid is added, especially, if done so just before implantation. Moreover, it would not seem logical to add the liquid medium to the uniform distribution of the biocompatible particles within the matrix and then remove the liquid. In addition, no procedure in Sander has been pointed to other than the one discussed above that could be used to achieve a uniform distribution of the biocompatible particles within the matrix as required by Sander.

Furthermore, as pointed out in our Appeal Brief, even if Supersaxo were properly combined with Sander, the present invention would still not be suggested. In particular, even if materials of Sander, were freeze dried, such materials would not be reconstitutable, which upon the addition of water become bioresorbable, injectable implant products that are **gels**, according to the present claims or **hydrogels**. To be reconstitutable to a gel or more especially to a hydrogel, the composition that is freeze dried would need to be in the form of a gel prior to the freeze drying.

VII. CONCLUSION

In view of the above comments and our Appeal Brief, it is abundantly clear that the Primary Examiner has erred in the rejection of claims 10-19 and 23-27. Accordingly, it is respectfully requested that the Board reverse the Examiner and allow the rejected claims 10-19 and 23-27.

Please charge any fees due with this paper to our Deposit Account No. 22-0185, under Order No. 22114-00001-US1 from which the undersigned is authorized to draw.

Dated: July 9, 2008

Respectfully submitted,

Electronic signature: /Burton A. Amernick/
Burton A. Amernick
Registration No.: 24,852
CONNOLLY BOVE LODGE & HUTZ LLP
1875 Eye Street
Suite 1100
Washington, DC 20006
(202) 331-7111
(Fax)(202)-293-6229
Attorney for Assignee